The Wind Industry claim that by changing from (e.g.) 77m rotor-diameter GE 1.5MW turbines to 100m rotor-diameter GE 1.6MW turbines, the Capacity Factor (average turbine power output/peak turbine power output) increases from ~ 30% to ~ 40%, representing greater overall efficiency.

According to these figures, a GE 1.5MW turbine averages 450KW, whilst a newer GE 1.6MW turbine averages 640KW, yielding an improvement in average Power Output of 42%.

But larger diameter wind-turbines must be spaced farther apart, by an amount proportional to rotor diameter, to avoid loss of power and excessive dynamic loading from turbulent wake interaction (which can otherwise lead to turbine blade failure from fatigue).

So the 30% increase in diameter from 77m to 100m requires "30% - squared" increase in land area, ie 69% more land area.

So these "more efficient" updated turbines provide 42% increased average energy, but require 69% increased land use. This represents (1.42/1.69) = 16% less energy per acre of windfarm land.

So in this context, making more land available for wind energy implies less efficient overall use of additional land.

M.A.Swinbanks,

Port Hope, 4/25/2013